
II. *Part of a Letter from Mr. Anthony van Leeuwenhoek, F.R.S. to Mr. James Petiver, F.R.S. Containing some Microscopical Observations upon the Animalcula in Semine of Young Rams,*

Delft in Holland, August 18. 1711.

SIR,

Having about the time that you call'd upon me, employed my self in Dissecting the Testicles of a young Ram, I take the Liberty to communicate to you my Observations thereupon. At the latter end of the Month of June, I procured two Testicles of a young Sheep, to which they still gave the name of a Lamb, and I made a small Incision in the lower part of each of them, where there was a Protuberant roundness, and from whence proceeded the *Vasa Semen deferentia*: Then I squeez'd a little whitish Matter out of them, which I immediately placed before a Microscope; and having very clearly observ'd a vast number of *Animalcula* living and moving, I was resolved not to ingrois the Spectacle to my self alone, but I call'd four several Persons to be Eye-witnesses of the same; which I did the rather, because I have been charged by some Learned People, but not of our Town, that what I have affirmed upon this matter was not true: And because the *Animalcula* could not be seen so distinctly, by reason of the vast number and the quick Motion of 'em in the little slimy Matter, in which they swam among one another, I took a little Rain Water, about the quantity
of

of a great Pin's head, and mixed it with an equal quantity of the said Matter ; whereby it being very much Diluted, I placed it again before the Microscope, and then we could see very clearly the dead Bodies of those *Animalcula* lying in the Liquor.

About 10 or 12 Days after, I got two other Testicles of a young Sheep, otherwise call'd a Ram, but they were something smaller than the former ; and I proceeded with them as I had done with the rest, but found that the whitish Matter was much more fluid than the former ; and that there was floating in it a vast number of very clear little Globular Bodies, of which I could not discover any of the least Particles to be like those living *Animalcula* above-mention'd. From which Observation I thought with my self, that as the unborn Creatures lie in their Mothers Womb, in such a Globular Figure, as is consistent with our Bodies ; so in like manner, these round Bodies or Globules, which I saw, were *Animalcula* proceeding from the *Semen Masculinum*, that were not yet arrived to their compleat Figures.

Eight Days after, I got two more Testicles of a young Ram, which were smaller than the former ; which having open'd in the like manner, as I did the other, I found not only no *Animalcula* that appeared to be living, but the transparent Globules were not the fourth part so big, according as I could guess with my Eye, as the above-mention'd.

Upon the 13th of July, I again caused two Testicles to be brought me of a sucking Ram ; which tho' it was a young Ram, they call it a sucking Lamb, because it had suck'd its Dam a little before it was killed. I was inform'd, that this Lamb was about 3 Months and a Fortnight old, and its Testicles were a little more than half as big as the first. Having opened these likewise, in that part where the *Vasa Semen deferentia* were thicker,

thickest, and having taken one of them out, and view'd it with the Microscope, I judged that those Globules which I observ'd therein were so small; that 25 of them were not equal to one of the great ones above mention'd.

Upon the 18th of July, I made an Experiment of the same nature with the former, the Lamb being almost as old as the preceding; but I could not discover any Globules bigger than the last mention'd. nor any thing that appeared to be living.

Upon the 20th of July, I repeated my Experiment upon the Testicles of a young Ram, which was very near as big as the first of all; which having open'd in the usual Place, I saw great Numbers of *Animalcula* living: I discover'd likewise in the fluid Matter, which I had taken out, several Globules floating, which I imagined likewise might be some of those imperfect *Animalcula* above-mention'd. All these young Rams were killed the Day before their Testicles were brought to me.

Upon the 25th of July at Nine a Clock, they brought me two Testicles of a young Ram, which they had killed the Day before at Eleven a Clock at Noon: These were bigger than any I had seen this Year.

I immediately examined one of them, opening the part before mention'd; and I discover'd the *Animalcula* in so great a number, and like Clouds moving amongst one another, that it was no small Pleasure to me to have so many Objects before my Eye: And this I continued to do till the Clock struck 12; and consequently till the Testicles had been 25 hours out of the Body of the Ram, and had lain wrapt up in a Paper upon an earthen Dish, and were exposed to the Cold of the whole Night. Then I took a second Testicle, upon which I had as yet made no Remarks, and I bound it up in a Linnen Cloth, and kept it in a warm place, in order to view it the next Day; and I observ'd the first Testicle till

till 5 a Clock in the Afternoon, at which time I saw some *Animalcula* living ; but at 12 a Clock before, I discover'd a hundred living *Animalcula* for one that I saw at 5 a Clock : for between 12 and 5 a Clock, I had made 25 several Observations, and those almost always by making new Incisions with a Knife into the Testicles, and by squeezing the Matter out of the Incision, tho' no bigger than a Pins head.

Now while these *Animalcula* were swimming in the aforesaid fluid Matter, I observ'd often thro' the Microscope, that the first part of their Bodies had a very bright glance with it ; just as we see in small Fishes swimming in the Water, when they turn upon their Sides or Bellies, and cast a glittering brightness to the Eye : from which I imagin'd, that the upper part of the little Bodies of the *Animalcula in semine Masculino* of the Rams were flattish, and that that brightness proceeded from their exposing those flattish Sides to the sight in swimming.

The next Morning at 7 a Clock, I viewed the Matter of the second Testicle, which I had bound up in a Cloth, with my Microscope ; but I could not perceive any thing that had the least Life in it ; and the Testicle had begun to be corrupted, for an ugly smell proceeded from it.

Now since we perceive that the *Animalcula* in the Testicles of a Ram, can live 32 hours after the Ram is dead, we may very well conclude, that the said *Animalcula in Semine Masculino* of a Ram, being admitted into that part of the Womb of the Ewe, which is call'd *Tuba Fallopiana*, will live much longer, that being the place which Nature has provided for them : From whence it may follow, that after the Copulation of the Male and Female, the *Animalcula* may be 2 or 3 Days in coming into that part of the Womb, where they receive their Nourishment, and consequently before the Female

Female is Impregnated ; and the same may be applied to other Creatures. These are all the Observations I shall trouble you with at present, and remain,

Sir,

Yours to serve you,

Anthony van Leeuwenhock.

III. *A Letter from Mr Ralph Thoresby, F. R. S. to Dr. Hans Sloane, R. S. Secr. Giving an Account of a Lunar Rain-Bow seen in Derbyshire, and of a Storm of Thunder and Lightning which happened near Leedes in Yorkshire.*

Honoured Sir,

THE Iris Lunaris being so rarely seen, that the Ingenious Dr. Plot tells us (Nat. Hist. of Oxf. cap. i. §. 7.) that several Learned and Observing Men never saw one in their Lives, and that even Aristotle himself observ'd but two in above 50 Years ; the ensuing Account, which I had from a Gentleman of great Veracity and Ingenuity, will be the more acceptable. He is now in this Town, but was lately in Derbyshire, where, upon Christmas last, he was at Glapwell Hall ; and walking towards Patterson-Green, about Eight in the Evening, he observ'd with great Satisfaction the Bow, which the Moon had fixed in the Clouds : She had then pass'd her Full about 24 Hours ; the Evening had been